An analysis of long-distance anaphora, a binding phenomenon in which reflexives find their antecedents outside their local domain, is presented, using data from English, Chinese, Japanese, Korean, Russian, Icelandic, and Italian. It is found that no approach deals with long-distance anaphors exclusively and elegantly. The binding domain parametrizing approach, allowing only two domains loosely, cannot deal with the variations of the binding domain language by language, and can not deal with examples that do not observe rigorous c-commanding requirement between anaphors and their antecedents. The governing-category parametrizing approach can not deal with a long-distance anaphor that is not c-commanded by its antecedent. The subject parametrizing approach and anaphor movement approach both have problems similar to that of the binding domain parametrizing approach. Two mechanisms should be included in any insightful approach to long-distance anaphors across languages: strict and precise parametrization according to language, and escape of the c-commanding requirements in certain constructions. Any semantic or thematic theory should intervene in the explanation of long-distance anaphors, because syntactic theory alone can not explain that substitution of a predicate can affect long-distance anaphora in certain contexts. Contains 16 references. (MSE)
Abstract: This paper deals with long-distance anaphora, a binding phenomenon in which reflexives find their antecedents outside their local domain. I introduce various syntactic approaches to the phenomenon: Binding-domain parametrizing approach, Governing category parametrizing approach, SUBJECT parametrizing approach and Anaphor movement approach. I show that they cannot fully account for the long-distance anaphora. I suggest that semantic or thematic consideration are to be taken to give a full account for the long-distance anaphora.

1. Introduction

Chomsky's (1981) binding principle A for anaphors as in (1) has been challenged.

(1) An anaphor is bound\(^1\) in its governing category.

The so-called 'picture noun reflexives'\(^2\) in English and anaphors in some constructions, such as psychological predicate constructions or passives,\(^3\) challenge the 'c-command' constraint of the principle. Long-distance anaphors in various languages challenge the 'binding-domain' constraint of the principle in the sense that long-distance anaphors have their antecedents outside their governing category. They also challenge the 'c-command' requirement.

In this paper, I will deal with the challenge of long-distance anaphors to the binding principle A. Long-distance anaphors are found in East-Asian languages such as Chinese, Japanese, and Korean, and also in Russian, Icelandic and Italian as follows.\(^4\)
(2) a. Zhangsan k renwei Lisi zhidaow Wangwu xihuan zijii.
   Zhangsan thinks Lisi knows Wangwu likes self
   ‘Zhangsan thinks Lisi knows that Wangwu likes himself.’
   -Chinese (Cole, Hermon & Sung:1990, 1)-

b. Cheolsu-k-nun Youngshik-i cakiwlul coaha-nun-keot-ul
   Cheolsu-TOP Youngshik-NOM self-ACC like-ASP-COMP-ACC
   Youngsu-ka alkoitta-ko saengkakha-n-ta.
   Youngsu-NOM know-COMP think-ASP-DEC
   ‘Cheolsu thinks that Youngsu knows that Youngshik likes himself.’
   -Korean-

c. Johnrwa Billga zibunwro nikunde iru to omotte iru.
   John-TOP Bill-NOM self-ACC hates COMP think
   ‘John thinks that Bill hates himself.’
   -Japanese (Manzini & Wexler:1987, 419)-

d. Professor j poprosil assistenta; chit a svoj doklad.
   Professor asked assistant read self’s report
   ‘The professor asked his assistant to read self’s report.’
   -Russian (Yang:1983, 179)-

e. Jón segir að Maria elski sig.
   ‘Jón says that Maria loves(subjunctive) self.’
   -Icelandic (Manzini & Wexler:1987, 417)-

f. Alice vide Mario guardare sè nello specchio.
   ‘Alice saw Mario look at self in the mirror.’
   -Italian (Manzini & Wexler:1987, 416)-

It can be said that there are two main streams in dealing with these examples of long-distance anaphora. The first one is concerned with the parameterization of the binding domain, the governing category, or SUBJECT. The second one is related to movement at LF. I will examine various proposals along these lines and suggest the most appropriate approach to explain the long-distance anaphora.
2. **Binding-domain parametrizing approach**

The phenomenon of long-distance binding can be explained by eliminating 'governing category' from the binding principle. Since an anaphor which has a long-distance usage is bound either in its governing category or outside its governing category, it is no longer necessary that a governing category should exist in the description of the binding principle for the anaphor. This elimination of a governing category from the binding principle can be interpreted as parametrizing the binding domain to have a [-governing category] value. This line is taken by Hong (1985) and Lee (1983), especially for the explanation of long-distance anaphora in Korean. O'Grady (1986:18) introduces Hong's (1985) version of binding principle A as in (3).

(3) An anaphor is bound.

Lee (1983:211) reformulates the binding condition A which fits Korean data, as in (4).

(4) An anaphor need not be bound in its governing category.

These two binding principles seem to have the same effect if (4) is not interpreted as meaning that an anaphor can be unbound.

They can deal with all other long-distance anaphors in the above as well as the Korean long-distance anaphor. But they can not explain the following examples.

(5) Zhangsan; nayang zuo dui ziji; bu li
   'That Zhangsan behaved in such a manner did himself no good.'
   -Chinese (Battistella:1989, 999)-

(6) Cheolsu-ka cakiš-tul miweoha-n-ta-nun sashil-i
   Cheolsu-NOM self-ACC dislike-ASP-DEC-ADJ fact-NOM
   Youngshik-tul nolla-ke ha-yet-ta.
   Youngshik-ACC frighten-CAUSE-PAST-DEC
'The fact that Cheolsu disliked himself frightened Youngshik.'

-Korean-

(7) Jónj segir að Maria; elskar sig/vj.

'Jón says that Maria loves self.'

-Icelandic (Manzini & Wexler:1987, 417)-

The Chinese sentence (5) violates principle (3) because the antecedent Zhangsan does not c-command ziji. Nevertheless, the sentence is grammatical. The Korean anaphor caki in (6) has the same problem. Principle (3) can not explain why the Icelandic anaphor sig in (7) can not be bound by Jón in spite of the c-command relationship between the plausible antecedent Jón and the anaphor sig.

3. Governing category parametrizing approach

Manzini & Wexler (1987:422-423) parametrize the governing category as in (8).

(8) \( \gamma \) is a governing category for \( \alpha \) iff

- \( \gamma \) is the minimal category that contains \( \alpha \) and a governor for \( \alpha \) and

a. can have a subject or, for \( \alpha \) anaphoric, has a subject \( \beta \),
   \( \beta \neq \alpha \); or
b. has an Infl; or
c. has a Tense; or
d. has a 'referential' Tense; or
e. has a 'root' Tense;

if, for \( \alpha \) anaphoric, the subject \( \beta' \), \( \beta' \neq \alpha \), of \( \gamma \), and of every
category dominating \( \alpha \) and not \( \gamma \), is accessible to \( \alpha \).

Manzini & Wexler accept the definition of 'accessible' in Chomsky (1981), whereby a category is accessible to an argument \( \alpha \) if and only if it c-commands \( \alpha \) and it can be coindexed with \( \alpha \) without violating the \( i \)-within-\( i \) Condition. According to the \( i \)-within-\( i \) Condition, no element can be contained in a category bearing the same index. As for the subject-control property of long-distance anaphors, Manzini & Wexler introduce
the concept of 'proper antecedent' and propose a revised binding principle A as in (9).

(9) An anaphor is bound in its governing category by a proper antecedent.

A proper antecedent for \( \alpha \) is defined to be either a subject or else any element at all.

Let's apply this binding principle to the examples. The value of the governing category in (2a)-(2c) is 'root' Tense. All the subjects of these sentences are accessible to the anaphors. So the governing category is the root sentence. The proper antecedents for these anaphors are subjects. The anaphors are bound by any c-commanding subjects in the root sentence as the binding principle (9) predicts. In the Russian example (2d), the value of the governing category is Tense. The root sentence with accessible subjects to the anaphor svoj is the governing category. The binding principle correctly predicts that svoj can be bound by the embedded subject assistenta or the matrix subject professor. Principle (9) also correctly predicts that Icelandic sig in (2e) and Italian sè in (2f) are bound by their embedded subjects or matrix subjects.

Let's consider the examples (5)-(7). In (7), the governing category for Icelandic anaphor sig is the embedded sentence, but not the root sentence as in (2e) because the embedded sentence is the minimal category that contains sig, its governor, and the 'referential' Tense for Icelandic anaphor. Sig is bound only by the embedded subject as predicted. The Korean anaphor caki in (6) does not have a governing category. Before 'accessibility' is considered, the minimal category that contains caki, the governor for caki, and the 'root' Tense is obviously the root sentence. But the 'accessibility' requirement does not hold in a root sentence. The matrix subject [Cheolsu-ka caki-lul miweoha-n-ta-nun sashil]-] is not accessible to caki because the coindexaion of caki and the subject, represented as [Cheolsu-ka caki-lul miweoha-n-ta-nun sashil]-]; violates the i-within-i Condition, whereas the embedded subject of the root sentence Cheolsu is accessible to caki. Therefore, caki does not have a governing category and is correctly predicted to pick its antecedents freely. The antecedent of caki in (6) can be Cheolsu or Youngshik.

Principle (9), however, faces difficulty in explaining the anaphoric relation in (5). The governing category for Chinese anaphor ziji in (5) is
the root sentence because there is no 'accessibility' problem in this case. Principle (9) can not predict that ziji refers to Zhangsan because Zhangsan in the embedded sentence can not c-command ziji in the matrix sentence.

4. SUBJECT parametrizing approach

Progovac (1992) proposes what she calls 'relativized SUBJECT' analysis to explain long-distance anaphors. Her approach is regarded as the parameterization of SUBJECT as either Agr or a subject, [NP, NP] or [NP, IP]. Progovac's (1992:672) principle for long-distance anaphors is composed of the following two parts:

(10) An X0 reflexive must be bound to Agr, as the only salient (c-commanding) X0 category.

(11) Agr is the only SUBJECT for X0 reflexives.

She assumes that Chinese has syntactic Agr, but that its morphological emptiness makes it anaphoric, or dependent on coindexation with higher Agr. She argues that this assumption provides a persuasive explanation for the subject-oriented property of ziji and blocking effects whereby long-distance binding is blocked if a different person Agr intervenes. The examples of East-Asian languages, (2a)-(2c) can be explained in this way. If Agr in Chinese, Japanese, or Korean is anaphoric and bound to a higher Agr, the SUBJECT is the whole Agr chain and the domain extends up to the whole sentence, which includes the head of the chain. The anaphors in (2a)-(2c) are bound by either of the Agr's in each sentence respectively, and then, by transitivity, they can be bound by either of the subjects in each sentence.

Progovac (1992:677) deals with long-distance anaphora in subjunctives. She argues that the extension of the binding domain in subjunctives is achieved through the LF transparency ('invisibility') of recoverable functional categories (e.g., INFL and COMP). Subjunctive INFL which does not host independent Tense is recoverable and transparent at LF. Therefore, Agr in subjunctives can not count as a SUBJECT. In that case, the matrix indicative Agr functions as a SUBJECT. But let's compare (2e) with (12).
(12) Alice pensava che Mario, avesse guardato sé/nello specchio.

'Alice thought that Mario had (subjunctive) looked at self in the mirror.'

-Italian (Manzini & Wexler:1987, 416)-

The proposal that Agr in subjunctives is not a SUBJECT can not deal with (12), even though it can account for (2e). In (12), Agr in subjunctive should be a SUBJECT and the binding domain should be confined to the embedded sentence.

This approach can not account for (5) and (6) in which the c-commanding relation between antecedents and anaphors is not observed, because this approach assumes such a structural relation.

5. Anaphor movement approach

Cole, Hermon & Sung's (1990) and Battistella's (1989) approach. The anaphor movement approach, which is quite different from preceding ones, is proposed by Cole, Hermon & Sung (1990) and elaborated by Battistella (1989). They account for the fact that reflexives may be indefinitely far from their antecedents in the languages like Chinese, Japanese and Korean, by a unified and entirely local theory of antecedents for bound anaphors, which applies to English as well. What is most distinguishing is that they relate binding to successive cyclic movement at LF, whose process is similar to that of wh-movement. The possibility of long-distance reflexives is due to this property of INFL. In languages which allow long-distance reflexives, INFL is lexical and a proper governor, while in other languages, one of which is English, INFL is functional and not a proper governor. If INFL is lexical, VP is L-marked by INFL and is not a barrier. The anaphor movement to INFL crosses no barrier and the trace of the anaphor is properly governed by INFL, which results in no ECP violation. The subject orientation or subject-control property of long-distance anaphors results from the process of INFL-to-INFL movement. Since only the subject of a clause c-commands INFL, the subject is the only possible antecedent for the long-distance anaphors.

Battistella (1989) elaborates this movement to INFL approach. She accounts for the tricky example (5). The INFL heading the nominal subject clause receives its agreement index from its subject Zhangsan.
and then, the percolation of agreement features from INFL to S follows. *Ziji* in the INFL of the matrix clause is c-commanded by the nominal subject and can be coindexed with this nominal subject. This means that *ziji* receives index i. Since antecedenthood is a relation between indices, *Zhangsani* can be the antecedent of *ziji*. This approach still cannot account for (6), another example in addition to (5), in which the relation between antecedents and anaphors does not satisfy the c-commanding requirement.

A serious problem with this approach is that it cannot be extended to the long-distance anaphora different from that of Chinese, Japanese and Korean. The essential correlation that is assumed in Cole, Hermon & Sung (1990) and Battistella (1989) is that INFL in languages which allow long-distance anaphors is lexical and a proper governor. If it is true, INFL in Russian, Icelandic and Italian is lexical and a proper governor because these languages show long-distance anaphors as in (2d)-(2f). Therefore, this approach cannot explain some complex sentences in which long-distance anaphora is not allowed, as in (7), (12) and in the following example (13), because the approach always predicts the binding domain is the whole sentence so far as INFL is lexical.

(13) Vanja znaet c'to Volodja; ljubit svojefru z'en-u.
    Vanja knows that Volodja loves self's wife.
    'Vanja knows that Volodja loves self's wife.'
    -Russian (Pronovac:1992, 674)-

Yang's (1991) approach Yang (1991) also takes an anaphor movement approach. But he rejects Cole, Hermon & Sung's assumption that only so-called 'non-phrasal' anaphors may undergo X0 movement, whereas only so-called 'phrasal' anaphors may undergo XP-movement. Yang (1991:428) claims that 'non-phrasal' anaphors like Korean *caki* have properties of XP's as well as heads and that this dual property of *caki* can explain the cases of non-subject-orientation as well as subject-oriented anaphora. If Korean anaphor *caki* as XP is assumed to undergo QR (Quantifier Raising), it can adjoin to VP or IP. If it adjoins to VP, it is licensed by the object in terms of the adjacent government. On the other hand, if it adjoins to IP, it is licensed by the subject. This means that this approach can deal with the tricky Korean example (6) which can be explained only by Manzini & Wexler (1987), among the other approaches. If *caki* in (6) first adjoins to IP in the embedded sentence, it is licensed by the embedded subject *Cheolsu*, that is, the antecedent of *caki* is *Cheolsu*. If it moves further and adjoins to VP in the matrix sentence, it is licensed by the matrix object *Youngshik*. Chinese
example (5), however, cannot be explained, regardless of whether Chinese anaphor is assumed to undergo XP movement or X\(^0\) movement. This movement approach cannot associate the anaphor ziji with the antecedent Zhangsan in (5) because ziji in (5) is the matrix object and Zhangsan is the embedded subject.


(14) An agreement-sensitive element induces feature percolation.

If Korean caki and Japanese zibun are not assumed to be agreement-sensitive elements, they are free to move to the matrix INFL without inducing percolation and feature conflict. Korean example (2b) and Japanese example (2c) can be dealt with in this way.

The problem of this approach is, as Yang (1991:415) points out, that there is no explicit criterion for agreement-sensitivity which is the essence of this approach. Yang assumes that English 'phrasal' anaphors like himself, are agreement-sensitive elements whereas the Korean 'non-phrasal' anaphor caki is not. But the 'phrasal' or 'non-phrasal' distinction between anaphors in languages does not decide whether a given anaphor is agreement-sensitive or not. For example, Chinese ziji, though it is 'non-phrasal', is assumed to be an agreement-sensitive element with respect to phi-features.6

This approach cannot deal with the Italian example (12) under the assumption that [+indicative INFL] in Italian is an agreement-sensitive element, like Progovac's (1992). In (12), if Italian anaphor sé has the index of the embedded subject Mario, there is no feature conflict because [+subjunctive] INFL is not regarded as an agreement-sensitive element. Even if Italian anaphor sé has the index of the matrix subject Alice, no feature conflict occurs because the index feature of sé which percolates to the matrix INFL is the same one that the INFL receives from the matrix subject through SPEC-Head Agreement. But this prediction is wrong. As (12) shows, the coindexation between the matrix subject and the anaphor is not allowed.
6. Conclusion

No approach is found to deal with long-distance anaphors exclusively and elegantly. The binding domain parametrizing approach allowing only two domains loosely can not deal with the variations of the binding domain language by language, and it can not deal with examples which do not observe the rigorous c-commanding requirement between anaphors and their antecedents. The governing category parametrizing approach can not deal with a long-distance anaphor which is not c-commanded by its antecedent. Manzini & Wexler (1987) try to avoid the c-commanding requirement. The SUBJECT parametrizing approach has a similar problem that the binding domain parametrizing approach has, even if more improved with regard to binding domain. The anaphor movement approach has a problem similar to the binding domain parametrizing approach, even if more improved concerning the binding domain and c-commanding requirement, especially in Yang (1991).

Two mechanisms should be included in any insightful approach to deal with long-distance anaphors across languages. One mechanism is concerned with defining the binding domain, depending upon a language. This will take some form of a strict and precise parameterization according to languages. The other mechanism is to escape the c-commanding requirement in certain constructions. Feature percolation in Battistella (1989) or the assumption of XP property of Korean X0 anaphor in Yang (1991) can be regarded as an attempt to do this. That may be helped by semantic or thematic constraints as in Tang (1989), or Grimshaw (1990). Tang (1989:101) proposes the animacy condition that the antecedent of a reflexive must be animate in Chinese. According to Tang, Zhangsan in (5) can be an antecedent for ziji because the nominal subject clause containing Zhangsan c-commands ziji even if Zhangsan does not c-command ziji, and Zhangsan is animate. Grimshaw (1990:167) points out that long-distance anaphors in psychological predicates, for example, frighten, take arguments of maximal thematic prominence as their antecedents. The object of a psychological predicate, as in (6), though it does not c-command the anaphor, is the antecedent for the anaphor because the object as Experiencer is thematically more prominent than the subject as Theme.7

Anyway, semantic or thematic theory should intervene in the explanation of long-distance anaphors, because syntactic theory alone can not explain that substitution of a predicate can affect long-distance
anaphora in the following examples since the substitution does not make any difference in configuration or grammatical relations.

    John-wa Bill-ga zibun7-o nikundeiruko-to omotteiru.
    'John thinks Bill hates self.'

    John-wa Bill-ga zibun7-o urayandeiru-to omotteiru.
    'John thinks Bill envies self.'

    John-wa Bill-ga zibun7-o imashimeru-to omotteiru.
    'John thinks Bill disciplines self.'

In (15), Korean caki, Chinese ziji and Japanese zibun can refer to either the embedded subject Bill or the matrix subject John respectively. In (16), the anaphors only refer to the matrix subject John. In (17), the anaphors can not have long-distance antecedents unlike the former cases, but they only refer to the embedded subject Bill.

NOTES

1 α is bound by β if and only if α and β are coindexed, and β c-commands α. β c-commands α if the first branching node dominating β dominates α, and if neither β nor α dominates the other.

2 This term refers to the reflexives in the structure of [NP [DET] picture of self]. The antecedent for a 'picture noun reflexive', in general, need not c-command the anaphor. Postal (1971) uses this term and defends the view that 'picture noun reflexives' are not subject to the
same constraint as ‘ordinary reflexives’. The following is some examples.

(1) The picture of himself, in the museum bothered John.
   (Pollard & Sac:1992, 264)

(2) The picture of herself, on the front page of the Times made Mary’s claim seem somewhat ridiculous.
   (Pollard & Sac:1992, 2)

(3) Pictures of themselves, would please the boys.
   (Tang:1989, 116)

3 Examples (1), (2) and (4) are concerned with psychological predicate constructions and examples (3) and (5) are related to passives.

(1) [La [propria], salute] preoccupa molto Osvaldo.
   ‘Self’s health worries Osvaldo a lot.’
   -Italian (Grimshaw:1990, 164)-

(2) [[[Zhangsan, de] tuisang], de yangzi, shi ziji, de Zhangsan GEN depression GEN manner make self GEN fumu hen danxin.
   parents very worry
   ‘Zhangsan’s depression worried his parents.’
   -Chinese (Tang:1989, 106)-

(3) [[[Zhangsan, de] baba], de qian, bei ziji, de Zhangsan GEN father GEN money by self GEN pengyou touzou le.
   friend steal ASP
   ‘Zhangsan’s father’s money was stolen by his friend.’
   -Chinese (Tang:1989, 104)-

   ‘John’s past ails self.’
   -Korean (O’Grady:1987, 254)-

(5) [[Cheolsu, ilkicang, i] caki, chaeksang, e noyeoit, ta. Cheolsu-GEN diary-NOM self desk -LOC be laid
   ‘Cheolsu’s diary is laid on his desk.’
   -Korean-
4 In glosses, ACC=Accusative marker, ADJ=Adjectival Marker, ASP=Aspect marker, DEC=Declarative marker, GEN=Genitive marker, NOM=Nominative marker, LOC=Locative Marker, TOP=Topic marker.

5 According to Chomsky (1981, 1986), ECP (Empty Category Principle) is a requirement for traces which are left behind after Move-α. ECP requires that every trace must be properly governed. Proper government is achieved when there is no barrier between governors and governees. Chomsky (1986:14) relates barrierhood to L-marking. In short, if a maximal projection γ is L-marked, it can not be a barrier. L-marking is defined as follows, in Chomsky (1986:24). Where α is a lexical category, α L-marks β iff β agrees with the head of γ that is θ-governed by α. θ-government is defined as follows:

α θ-governs β iff α is a zero-level category that θ-marks β, and α, β are sisters.

6 Chomsky (1981:330) refers to the members of φ as φ-features. The set φ includes person, number, gender, Case, etc.

7 Grimshaw (1990:7-8) assumes the thematic hierarchy in which the Agent is always the highest argument. Next ranked is Experiencer, then Goal/Source/Location, and finally Theme.

REFERENCES


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